Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	27	(amorphous adj carbon) and (annealing or (heat adj treating) or (heat adj treatment) or (heat adj treated)) and (continuous adj wave)	US-PGPUB; USPAT	OR	ON	2005/12/13 11:23
L2	20	1 and @ad<"20031003"	US-PGPUB; USPAT	OR	ON	2005/12/13 11:40
L3	2	(amorphous adj carbon) and (annealing or (heat adj treating) or (heat adj treatment) or (heat adj treated)) and (continuous adj wave)	USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/13 11:39
L4	13	(amorphous adj carbon) same (plasma adj enhanced adj chemical)	USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/13 11:40
L6	229	(amorphous adj carbon) same (plasma adj enhanced adj chemical)	US-PGPUB; USPAT	OR	ON	2005/12/13 11:40
L7	107	(amorphous adj carbon) with (plasma adj enhanced adj chemical)	US-PGPUB; USPAT	OR	ON	2005/12/13 11:40
L8	95	7 and @ad<"20031003"	US-PGPUB; USPAT	OR	ON	2005/12/13 11:49
L9	6	8 and "c.sub.3h.sub.6"	US-PGPUB; USPAT	OR	ON	2005/12/13 11:50

US-PAT-NO: 5599590

DOCUMENT-IDENTIFIER: US 5599590 A

TITLE: Texture treatment for carbon substrate and for carbon overcoat layer of magnetic disks

---------- KWIC ---------

Abstract Text - ABTX (1):

A texture treatment for a carbon substrate of a magnetic disk or for a carbon overcoat layer of a magnetic disk is effective to prevent the generation of a stiction phenomenon between a magnetic head and the surface of a magnetic disk. The texture treatment for a carbon substrate or carbon overcoat of a magnetic disk involves the steps of: preparing the carbon disk surface; forming a catalytic material layer on the surface; and performing a **heat treatment** of the disks in an oxidizing atmosphere. Preferably, islands of catalytic material are formed on the surface by sputtering, and a laser **heat treatment** is used in an oxidizing atmosphere.

Brief Summary Text - BSTX (9):

The present inventors have earnestly studied the texture treatment of **amorphous carbon** substrates. As a result, it was found that, by the steps of polishing an **amorphous carbon** substrate to a specified surface roughness, and then heating it at a specified temperature in an oxidizing atmosphere, it is, possible to treat an **amorphous carbon** substrate to obtain a surface roughness suitable for a magnetic disk. Thus, the invention accomplished under this principle has been filed as Laid-open Japanese Patent Application Nos. 410434/1990 and No. 410436/1990. See also GB 2,242,423A.

Brief Summary Text - BSTX (10):

In this process, the **amorphous carbon** substrate is polished to a specified surface roughness, and is heated at a temperature of from 300.degree. C. to 1000.degree. C., preferably, from 400.degree. C. to 700.degree. C. The oxidation reaction C+O.sub.2 .fwdarw.CO.sub.2 occurs. The gasified carbon (represented by the carbon dioxide gas) leaves surface irregularities on the polished surface. Accordingly, by control of the heating conditions such as the temperature and the treatment time, it is possible to easily treat the **amorphous carbon** substrate to a specified surface roughness, and hence to prevent the surface from being made more rough than necessary. This prevents the head stiction to the magnetic disk, improves the characteristics of the magnetic film formed on the **amorphous carbon** substrate.

Detailed Description Text - DETX (7):

It is preferable to use a CO.sub.2 laser having a laser power which can be varied in the range from about 10-5,000 watts, preferably about 10-2,000 watts. Suitable CO.sub.2 lasers have a wavelength of 10.4 microns. The laser light beam may have any desired cross section. Further, from spectrophotometric measurements, it has been found that the carbon substrate absorbs about 50% of the laser beam energy at the 10.4 micron wavelength. This degree of absorption is suitable for control of the oxidation process. The cross section of the laser beam is determined by the use of specific optics with the laser and can be adjusted to have a square, rectangular, circular shape and the like. The cross section of the laser beam may be varied from about 1-15 mm, preferably about 1-10 mm. The laser is preferably operated with a **continuous wave** output.

Detailed Description Text - DETX (36):

In this experiment, a CO.sub.2 **continuous wave** laser having a variable power of 10-2000 watts was operated at 1000 watts and used to deliver a square beam having a 3/8 inch width. This laser was used to irradiate a polished carbon substrate onto which was sputtered a 5 .ANG. layer of Cr metal as discrete islands. The disk shaped substrate was rotated at speeds varying from 10-100 rpm and irradiated for 10 seconds to produce circumferential texturing.

DOCUMENT-IDENTIFIER: US 20050056940 A1

TITLE: Masking structure having multiple layers including an amorphous carbon layer

---------- KWIC ---------

Detail Description Paragraph - DETX (9):
[0017] Amorphous carbon layer 330 may be formed by deposition process. In some embodiments, amorphous carbon layer 330 is formed by chemical vapor deposition (CVD) process. In other embodiments, **amorphous carbon** layer 330 is formed by **plasma enhanced chemical** vapor deposition (PECVD) process. Other known processes can also be used to form amorphous carbon layer 330.

Detail Description Paragraph - DETX (10):
[0018] In an exemplary PECVD process to form a transparent amorphous carbon layer such as amorphous carbon 330, a process gas including propylene (**C.sub.3H.sub.6**) is introduced into a PEVCD chamber at an exemplary flow rate between about 500 sccm (standard cubic centimeters per minute) and about 2000 sccm. An additional gas including helium may be also introduced into the chamber at an exemplary flow rate between about 250 sccm and about 500 sccm. Further, embodiments exist where at least one of the hydrocarbon gases is used as the process gas. Examples of the other hydrocarbon gases include CH.sub.4, C.sub.2H.sub.2, C.sub.2H.sub.4, C.sub.2H.sub.6, and C.sub.3H.sub.8. Helium may also be used in combination with at least one of these hydrocarbon gases.

Detail Description Paragraph - DETX (11):
[0019] In the above exemplary process to form the transparent amorphous carbon layer such as amorphous carbon 330, a gas mixture is introduced into the chamber. In this specification, the gas mixture may be either one gas only or a combination of at least two gases. For example, the gas mixture may be either propylene (**C.sub.3H.sub.6**) only or a combination of propylene and helium. As another example, the gas mixture may be at least one of the propylene, CH.sub.4, C.sub.2H.sub.2, C.sub.2H.sub.4, C.sub.2H.sub.6, and C.sub.3H.sub.8. As a further example, the gas mixture may be at least one of the propylene, CH.sub.4, C.sub.2H.sub.2, C.sub.2H.sub.4, C.sub.2H.sub.6, and C.sub.3H.sub.8 plus helium.

DOCUMENT-IDENTIFIER: US 20040121604 A1

TITLE: Method of etching a low-k dielectric layer

---------- KWIC ---------

Abstract Paragraph - ABTX (1):

A method of etching a low-k dielectric layer. A substrate having a low-k dielectric layer to be etched, on which an **amorphous carbon** doped layer is formed over the low-k dielectric layer by **plasma enhanced chemical** vapor deposition (PECVD), a resist layer is formed over the **amorphous carbon** doped layer , and the resist layer is patterned to define a first opening thereby forming a resist mask. The amorphous carbon doped layer is etched to define a second opening, thereby forming a hardmask, the resist mask is stripped, and the low-k dielectric layer not covered by the hardmask is etched to form a third opening as a trench or via.

Summary of Invention Paragraph - BSTX (14):

[0012] In order to achieve the above object, the present invention provides a method of etching a low-k dielectric layer, comprising forming an amorphous carbon doped layer as a etching hardmask. First, a substrate having a low-k dielectric layer to be etched is provided. Then, an **amorphous carbon** doped layer over the low-k dielectric layer is formed by **plasma enhanced chemical** vapor deposition (PECVD). Next, a resist layer is formed over the amorphous carbon doped layer, and patterned to define an opening, thereby forming a resist mask. Next, etch the amorphous carbon doped layer to define a hardmask. Further, the resist mask is stripped. Finally, the low-k dielectric layer is etched to form an opening.

Detail Description Paragraph - DETX (4):

[0017] Next, in FIG. 2, an amorphous carbon doped layer 120 having a thickness between about 300 and 1000 .ANG. over low-k dielectric layer 110 is formed by plasma enhanced chemical vapor deposition (PECVD), using the same deposition apparatus as that used in the deposition of low-k dielectric layer. **C.sub.3H.sub.6** gas is used as one precursor ionized by a RF-field with a frequency between about 380 KHZ and about 13.56 MHZ and the ionized carbon particles collide with low-k dielectric layer 110 at a temperature between 300.degree. C. and 450.degree. C. to form amorphous carbon doped layer 120 over low-k dielectric layer 110. Note that amorphous carbon doped layer 120 may further serve as an anti-reflective layer in the following patterning step.

Claims Text - CLTX (8):

7. A method of etching a black diamond layer, comprising: providing a substrate to be etched having a black diamond layer as a low-k dielectric layer; in situ formation of an **amorphous carbon** doped layer over the black diamond layer by **plasma enhanced chemical** vapor deposition (PECVD); forming a resist layer over the amorphous carbon doped layer; patterning the resist layer to define a first opening thereby forming a resist mask; etching the amorphous carbon doped layer not covered by the resist mask to define a second opening in the amorphous carbon doped layer, thereby forming a hardmask; stripping the resist mask; and etching the black diamond layer not covered by the hardmask to form a third opening.